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REVIEWER'S REPORT

Manuscript No.: **IJAR-53548** Date: 28-08-2025

Title: Assessment of the Impact of Human Activities on the Degradation of Lake Ecosystems Using Remote Sensing and GIS

Recommendation:
Accept as it is .....YES.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: Tahir Ahmad

Reviewer's Comment for Publication.

Abstract:

The abstract presents a comprehensive overview of the research conducted on Loktak Lake, a Ramsar-designated wetland of global ecological and socio-economic significance. It effectively highlights the dual methodology employed—remote sensing and GIS analysis, combined with socio-economic surveys—which provides both spatial and human-centered perspectives on environmental degradation. The key findings are clearly outlined: agricultural expansion, urban development, and deforestation contributing to a decline in lake area and water quality; overdependence on fishing; unsustainable agricultural practices; improper waste disposal; and the resulting loss of biodiversity. Quantitative data from household surveys (percentages related to waste disposal, pollution perception, and species loss) add empirical strength to the narrative. The conclusion that ecological degradation directly impacts community livelihoods underscores the urgency of the issue. Overall, the abstract is detailed, clear, and impactful.

Introduction:

The introduction situates the study within the broader context of India's biodiversity, emphasizing its status as a mega-biodiversity country. By highlighting the ecological richness of the North East and the significance of Loktak Lake, the paper establishes a strong geographical

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and environmental foundation. The cultural importance of Loktak Lake, described as the "lifeline" of Manipur, provides additional weight to the study's relevance. The framing of the research within both ecological and socio-economic dimensions demonstrates an interdisciplinary approach.

Relevance and Scope:

The research addresses a critical issue at the intersection of ecology, livelihood, and sustainable development. Loktak Lake, being both a Ramsar site and a vital resource for local communities, represents an important case study with regional and global relevance. The focus on human-induced pressures—agriculture, fishing, and waste management—ensures the study's applicability to broader discussions on wetland conservation and human-environment interactions.

Methodological Strength:

The combination of remote sensing and GIS with socio-economic surveys represents a robust methodology that integrates quantitative spatial analysis with qualitative community perspectives. This dual approach strengthens the credibility of the findings, showing not only the physical transformations of the lake ecosystem but also the lived realities of the local population.

Findings and Contribution:

The study contributes valuable insights into the ways human activities degrade wetland ecosystems, with Loktak Lake serving as a case in point. The identification of a cycle where ecological degradation exacerbates livelihood challenges highlights the complexity of environmental management. The integration of empirical data, particularly the use of percentages from surveys, enhances the academic value of the research.

Clarity and Style:

The manuscript is written in a clear and academically appropriate manner. Technical terms such as "remote sensing," "GIS," and "Ramsar wetland" are employed accurately. The writing balances scientific rigor with accessibility, ensuring the content is informative for both specialists and a broader audience concerned with ecology and development.

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Conclusion of Review:

The manuscript presents a coherent, well-structured, and contextually important study on the degradation of Loktak Lake. By combining technological tools with socio-economic surveys, it successfully captures the multi-dimensional nature of human-environment interactions. The work makes a significant contribution to wetland conservation research and underscores the urgency of sustainable management strategies for ecologically sensitive areas.